

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

Claim 1 (Currently Amended): A parallel download system executing on a client computer to control download of data from a plurality of source servers in parallel the system comprising:

a source scheduler that ranks a plurality of communication channels to generate a download schedule to control which of the plurality of communication channels ~~which source servers~~ will be downloaded from in parallel at a ~~current~~ point in time, wherein each of the source servers stores a copy of at least a portion of a file containing data, and wherein each of the plurality of communication channels comprises a network connection to one of the plurality of source servers;

a prioritization scheduler that determines a range of the data that should be requested from one or more of the plurality of source servers and the point in time when the range of data should be requested from the one or more of the plurality of source servers,

wherein the prioritization scheduler that tracks the an overall latency and throughput of for all the communication channels for one or more of the source servers while downloading at least a portion of the data of the file from two or more of the plurality of source servers communication channels in parallel and, wherein based on the latency and throughput of the communication channels, the prioritization scheduler dynamically adjusts the download schedule including the range of data and the point in time to request the range of data for at least one of the communication channels while downloading the data in parallel to control download performance; and

a proportional allocator that, for a source server of the one or more source servers, determines a plurality of portions of the range of data for that source server that should be downloaded using one or more of the communication channels to that source server, wherein each of the portions of the range of data to be downloaded from that source server is determined based on one or more of an expected throughput and latency of each of the one or more

communication channels to that source server and a time interval assigned by the proportional allocator for downloading the range of data using the communication channels; and

an I/O dispatcher to produce an output stream to present the downloaded data to one or more external applications or a user.

Claim 2 (Original): The parallel download system of claim 1, wherein the source scheduler keeps track of information about each source server and uses that information to decide which source servers to download from.

Claim 3 (Original): The parallel download system of claim 1, further comprising a data prioritizer that determines the priority of the data within the file to be scheduled, wherein the data prioritizer specifies an ordering of the data within the file from a highest priority data to a lowest priority data, and wherein different portions of the file are downloaded in parallel from the two or more of the plurality of servers in accordance with the ordering of the data within the file as specified by the data prioritizer and the download schedule as dynamically adjusted by the prioritization scheduler.

Claim 4 (Currently Amended): The parallel download system of claim 3, wherein the prioritization scheduler adjusts the download schedule with respect to the different servers while maintaining ~~the~~ a prioritization order in which the data within the file will be received.

Claim 5 (Original): The parallel download system of claim 1, further comprising one or more channel adapters to translate encoded information from a first format used to transfer the information across a channel to a second format desired for a download.

Claim 6 (Original): The parallel download system of claim 1, further comprising a control interface that allows external applications or users to control the behavior of the parallel download system.

Claim 7 (Cancelled).

Claim 8 (Previously Presented): The parallel download system of claim 1, further comprising a bulk scheduler to determine which bytes of the data within the file will be scheduled.

Claim 9 (Currently Amended): The parallel download system of claim 1, wherein the time interval comprises a current time interval, the system further comprising an advanced scheduler that integrates with the proportional allocator to allow data to be allocated during a different time interval than ~~[[a]]~~ the current time interval.

Claim 10 (Original): The parallel download system of claim 9, wherein the advanced scheduler features a sub-interval smoothing component that reduces the burstiness of the availability of high priority data with the proportional allocator.

Claim 11 (Currently Amended): The parallel download system of claim 1, further comprising a constraint scheduler to ensure that the source scheduler does not attempt to retrieve data that ~~[[a]]~~ at least one of the plurality of source servers cannot provide.

Claim 12 (Currently Amended): The parallel download system of claim 1, further comprising one or more channel receivers to read the data from a respective communication channel and writes it to an I/O dispatcher.

Claim 13 (Currently Amended): The parallel download system of claim 1, further comprising an integrity verification engine to determine that the desired data is received intact and that none of the communication channels were providing data that is either corrupt or a different version of the content that is desired.

Claim 14 (Currently Amended): The parallel download system of claim 13, wherein the integrity verification engine utilizes ~~an iterative~~ a hash construct.

Claim 15 (Original): The parallel download system of claim 13, further comprising a corruption repair engine to repair data corruption detected by the integrity verification engine.

Claim 16 (Currently Amended): The parallel download system of claim 1, further comprising one or more channel connector to establish a new communication channel to the scheduled source server.

Claim 17 (Original): The parallel download system of claim 1, wherein the source scheduler ranks the source servers according to one or more of:

- external ranking input received from a user or an administrator or an external ranking service;

- a throughput associated with each source server;

- a latency associated with each source server;

- a number of network hops to the source server from the parallel download system;

- a geographical location of each source server relative to the parallel download system;

and

- a channel cost associated with the channel from the parallel download system to each source server.

Claim 18 (Cancelled).

Claim 19 (Previously Presented): The parallel download system of claim 14, wherein the iterative hash construct comprises a Merkle Hash Tree.

Claim 20 (Previously Presented): The parallel download system of claim 1, wherein different portions of the file are downloaded in parallel from the two or more of the plurality of servers in accordance with the download schedule.

Claim 21 (Previously Presented): The parallel download system of claim 3, wherein the data prioritizer specifies the ordering of the data within the file from the highest priority data to the lowest priority data by adjusting the ordering of the data within the file during the download of the different portions of the file from the two or more plurality of servers.

Claim 22 (Previously Presented): The parallel download system of claim 21, further comprising one or more external applications that are attempting to access the data within the file, wherein the data prioritizer adjusts the ordering of the data within the file based on which one or more external applications are attempting to access the data within the file.

Claim 23 (Previously Presented): The parallel download system of claim 21, further comprising a corruption repair engine that detects and repairs corruption in previously downloaded portions of the data within the file, wherein the data prioritizer adjusts the ordering of the data within the file based on the detected and repaired corruption.

Claim 24 (Previously Presented): The parallel download system of claim 23, wherein the data prioritizer assigns a higher priority to the data within the file that the corruption repair engine is repairing.

Claim 25 (Previously Presented): The parallel download system of claim 21, wherein the data prioritizer assigns priority based on the number of servers from which the data is available for download.

Claim 26 (New): The parallel download system of claim 1, wherein a new server is added to the plurality of servers during download of data.

Claim 27 (New): The parallel download system of claim 1, wherein at least one server of the plurality of servers is removed during download of data.

Claim 28 (New): The parallel download system of claim 1, wherein the prioritization scheduler comprises the proportional allocator.

Claim 29 (New): The parallel download system of claim 1, wherein at least two of the communication channels provide network connections to a same one of the plurality of source servers.

Claim 30 (New): The parallel download system of claim 3, wherein the data prioritizer employs a prioritization scheme when multiple applications or component are simultaneously specifying different portions of the data to prioritize.

Claim 31 (New): The parallel download system of claim 30, wherein the prioritization scheme comprises at least one of a First Come First Serve, Last Come First Serve, Random, Shortest Processing Time First, Round Robin, and Shortest Remaining Processing Time First.

Claim 32 (New): The parallel download system of claim 3, wherein the highest priority data is downloaded on average before the lowest priority of data.